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EXAMINER HICKS, CHARLES V				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/562,592

Applicant(s)

UESHIMA ET AL.

Examiner

CHARLES HICKS

Art Unit

4175

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-32 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 July 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date 12/28/2005

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 12/28/2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein, that has been lined through, has not been considered.

Specification

Figure 65 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The disclosure is objected to because of the following informalities:

Specification page 8 line 12, the word "fix" not grammatically correct. Examiner suggests "fixed".

Appropriate correction is required.

Claims 1 and 26 are objected to because of the following informalities: use of the word "reflected" not grammatically correct. Examiner suggests "reflecting".

Claim 4 is objected to because of the following informalities: use of the phrase "operable emit" not grammatically correct. Examiner suggests "operable to emit".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6-8, 12-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manwaring (US 2002/0098897) in view of Numazaki (US 6144366).

In reference to claim 1, Manwaring teaches an information processing apparatus for displaying on a display device an image reflected a motion of an operation article which is held and given the motion by an operator (Manwaring Fig. 14; page 3 paragraph 41; a golf club and golf ball put in motion by the user), said information processing apparatus comprising: a stroboscope operable to emit light to the operation article (Manwaring page 6 paragraph 90) which has a reflecting surface (Manwaring page 2 paragraph 24) in a predetermined cycle (Manwaring page 6 paragraph 90; the strobe times the flash unit).

Manwaring however fails to teach an imaging unit operable to photograph the operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image; a differential signal generating unit operable to generate a differential signal between the lighted image and the unlighted image; a state information computing unit operable to compute state information of the operation article on the basis of the differential signal and generate a first trigger on the basis of the state information; and an image display processing unit operable to display a first object representing a movement locus of the operation article in response to the first trigger on the display device.

Numazaki teaches an imaging unit operable to photograph the operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image (Numazaki column 10 lines 40-56); a differential signal generating unit operable to generate a differential signal between the lighted image and the unlighted

image (Numazaki Fig. 2, 111; column 11 lines 9-19); a state information computing unit operable to compute state information of the operation article on the basis of the differential signal and generate a first trigger on the basis of the state information (Numazaki Fig. 98; column 32 lines 4-10); and an image display processing unit operable to display a first object representing a movement locus of the operation article in response to the first trigger on the display device (Numazaki column 26 lines 23-33).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with differential signal generating unit of Numazaki.

The motivation being to better obtain reflected light data (image taken during light emission and a next image taken during non-light emission) to analyze for various position characteristics of the image object.

Claim 6 is rejected as being dependent on rejected claim 1 as discussed above and further, Manwaring teaches wherein said image display processing unit displays a second object on the display device (Manwaring Fig. 7, 8), said state information computing unit generates a second trigger when positional relation between the second object and the first object representing the movement locus of the operation article meets a predetermined condition (Manwaring page 5 paragraph 73), and said image display processing unit displays the second object given a predetermined effect on the display device in response to the second trigger (Manwaring page 4 paragraph 64).

Claim 7 is rejected as being dependent on rejected claim 1 as discussed above and further, Manwaring teaches the information processing apparatus as claimed in claim 1, wherein said state information computing unit computes positional information as the state information of the operation article after speed information as the state information of the operation article exceeds a predetermined first threshold value (Manwaring page 3 paragraph 46) until the speed information becomes less than a predetermined second threshold value (Manwaring page 7 paragraph 97), or computes the positional information of the operation article after the speed information of the operation article exceeds the predetermined first threshold value before the operation article deviates beyond the photographing range of said imaging unit (Manwaring page 7 paragraph 97), determines, when the positional information of the operation article is obtained for three or more times, the appearance of the first object representing the movement locus of the operation article on the basis of the first positional information of the operation article and the last positional information of the operation article, and generates, when the positional information of the operation article is obtained for three or more times, the first trigger on the basis of the state information (Manwaring Figs. 17-19; page 3 paragraphs 45-47).

Claim 8 is rejected as being dependent on rejected claim 1 as discussed above and further, Numazaki teaches wherein said state information computing unit computes area information as the state information of the operation article, and generates a third

trigger when the area information exceeds a predetermined third threshold value, and said image display processing unit displays a third object on the display device in response to the third trigger (Numazaki column 36 lines 14-27; area information above a threshold generates a trigger to perform ration computation and displays the change in hand size as an object on the display device).

Claim 12 is rejected as being dependent on rejected claim 1 as discussed above and further, Numazaki teaches wherein said image display processing unit displays a cursor on the display device and moves the cursor in accordance with positional information as the state information of the operation article (Numazaki column 26 lines 8-14).

Claim 13 is rejected as being dependent on rejected claim 1 as discussed above and further, Numazaki teaches wherein execution of a predetermined process is fixed on the basis of the state information of the operation article (Numazaki column 27 lines 1-7; cursor state determines a "click").

Claim 14 is rejected as being dependent on rejected claim 12 as discussed above and further, Numazaki teaches wherein, when the cursor is displayed overlapping a fourth object, said image display processing unit displays an image

associated with the fourth object on the display device (Numazaki column 27 lines 19-29).

Claim 15 is rejected as being dependent on rejected claim 12 as discussed above and further, Numazaki teaches wherein said image display processing unit displays a character selected by the cursor on the display device (Numazaki column 28 lines 33-35).

Claim 16 is rejected as being dependent on rejected claim 1 as discussed above and further, Numazaki teaches wherein said state information computing unit generates a sixth trigger on the basis of the state information of the operation article, and said image display processing unit displays on the display device a fifth object corresponding to the motion of the operation article in response to the sixth trigger (Numazaki column 38 lines 43-51).

Claim 17 is rejected as being dependent on rejected claim 1 as discussed above and further, Manwaring teaches wherein said image display processing unit displays the first object representing the movement locus of the operation article on the display device after a lapse of a predetermined time from a generation of the first trigger (Manwaring page 5 paragraph 73).

Claim 18 is rejected as being dependent on rejected claim 1 as discussed above and further, Numazaki teaches wherein said image display processing unit displays a sixth object on the display device when the state information obtained successively of the operation article meets a predetermined condition (Numazaki column 26 lines 8-14; fingertip position determines if cursor is displayed).

Claim 19 is rejected as being dependent on rejected claim 1 as discussed above and further, Numazaki teaches wherein said image display processing unit displays on the display device a guide which instructs an operation direction and operation timing of the operation article (Numazaki column 27 lines 19-29).

Claim 20 is rejected as being dependent on rejected claim 1 as discussed above and further, Manwaring teaches the state information includes one or a combination of two or more selected from speed information, moving direction information, moving distance information, velocity vector information, acceleration information, movement locus information, area information, and positional information (Manwaring page 6 paragraph 97; area information).

Claim 21 is rejected as being dependent on rejected claim 1 as discussed above and further, Numazaki teaches further comprising a sound effect generating unit operable to output a sound effect through a speaker in response to the first trigger (Numazaki column 36 lines 53-62).

In reference to claim 2, Manwaring teaches an information processing apparatus for displaying an image on a display device on the basis of a result of detecting an operation article which is grasped and given a motion by an operator (Manwaring Fig. 14; page 3 paragraph 41; a golf club and golf ball put in motion by the user), said information processing apparatus comprising: a stroboscope operable to emit light to the operation article (Manwaring page 6 paragraph 90) which has a plurality of reflecting surfaces (Manwaring page 2 paragraph 24) in a predetermined cycle (Manwaring page 6 paragraph 90; the strobe times the flash unit).

Manwaring however fails to teach an imaging unit operable to photograph the operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image; a differential signal generating unit operable to generate a differential signal between the lighted image and the unlighted image; a state information computing unit operable to compute state information of the operation article on the basis of the differential signal and determine which of the plurality of reflecting surfaces is photographed on the basis of the state information; and an image display processing unit operable to display a different image on the display device depending on the determined reflecting surface.

Numazaki teaches an imaging unit operable to photograph the operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image (Numazaki column 10 lines 40-56) ; a differential signal generating unit

operable to generate a differential signal between the lighted image and the unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a state information computing unit operable to compute state information of the operation article on the basis of the differential signal and determine which of the plurality of reflecting surfaces is photographed on the basis of the state information (Numazaki Fig. 98; column 32 lines 4-10); and an image display processing unit operable to display a different image on the display device depending on the determined reflecting surface (Numazaki column 26 lines 23-33).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with differential signal generating unit of Numazaki.

The motivation being to better obtain reflected light data, of a plurality of reflective surfaces, to analyze for various position characteristics of the image object.

Claim 3 is rejected as being dependent on rejected claim 2 as discussed above and further, Manwaring teaches wherein the state information includes any one of area information, number information, profile information, and ratio information indicative of a profile, or a combination thereof about the reflecting surface (Manwaring page 6 paragraph 97).

Claim 25 is rejected as being dependent on rejected claim 2 as discussed above and further, Manwaring teaches wherein said operation article is provided with a

plurality of different reflecting surfaces (Manwaring page 4 paragraph 66; illustrating three reflective points).

In reference to claim 4, Manwaring teaches an information processing apparatus for displaying an image on a display device on the basis of a result of detecting an operation article which is grasped and given a motion by an operator (Manwaring Fig. 14; page 3 paragraph 41; a golf club and golf ball put in motion by the user), said information processing apparatus comprising: a stroboscope operable emit light to the operation article (Manwaring page 6 paragraph 90) which has a plurality of reflecting surfaces (Manwaring page 4 paragraph 66; illustrating three reflective points), in a predetermined cycle (Manwaring page 6 paragraph 90; the strobe times the flash unit).

Manwaring however fails to teach an imaging unit operable to photograph the operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image; a differential signal generating unit operable to generate a differential signal between the lighted image and the unlighted image; a state information computing unit operable to compute state information of each of the reflecting surfaces on the basis of the differential signal; and an image display processing unit operable to display an image on the display device in accordance with the state information of the plurality of reflecting surfaces.

Numazaki teaches an imaging unit operable to photograph the operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image (Numazaki column 10 lines 40-56); a differential signal generating unit

operable to generate a differential signal between the lighted image and the unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a state information computing unit operable to compute state information of each of the reflecting surfaces on the basis of the differential signal (Numazaki Fig. 98; column 32 lines 4-10); and an image display processing unit operable to display an image on the display device in accordance with the state information of the plurality of reflecting surfaces (Numazaki column 26 lines 23-33).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with differential signal generating unit of Numazaki.

The motivation being to better obtain reflected light data in order to determine the state characteristics of the reflecting surfaces.

In reference to claim 22, Manwaring teaches an information processing system comprising: an operation article having a reflecting surface, wherein said operation article is grasped and given a motion by an operator (Manwaring Fig. 14; page 3 paragraph 41; a golf club and golf ball put in motion by the user); a stroboscope operable to emit light to said operation article in a predetermined cycle (Manwaring page 6 paragraph 90; the strobe times the flash unit).

Manwaring however fails to teach an imaging unit operable to photograph said operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image; a differential signal generating unit operable to generate a differential signal between the lighted image and the unlighted image; a

state information computing unit operable to compute state information of said operation article on the basis of the differential 10 signal and generate a first trigger on the basis of the state information; and an image display processing unit operable to display a first object representing a movement locus of the operation article in response to the first trigger on the display device.

Numazaki teaches an imaging unit operable to photograph said operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image (Numazaki column 10 lines 40-56); a differential signal generating unit operable to generate a differential signal between the lighted image and the unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a state information computing unit operable to compute state information of said operation article on the basis of the differential signal and generate a first trigger on the basis of the state information (Numazaki Fig. 98; column 32 lines 4-10); and an image display processing unit operable to display a first object representing a movement locus of the operation article in response to the first trigger on the display device (Numazaki column 26 lines 23-33).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with differential signal generating unit of Numazaki.

The motivation being to better obtain reflected light data (image taken during light emission and a next image taken during non-light emission) to analyze for various position characteristics of the image object.

In reference to claim 23, Manwaring teaches an information processing system comprising: an operation article having a plurality of reflecting surfaces (Manwaring page 2 paragraph 24), wherein said operation article is grasped and given a motion by an operator (Manwaring Fig. 14; page 3 paragraph 41; a golf club and golf ball put in motion by the user); a stroboscope operable to emit light to said operation article in a predetermined cycle (Manwaring page 6 paragraph 90; the strobe times the flash unit); and determine which of the plurality of reflecting surfaces is photographed on the basis of the state information (Manwaring page 2 paragraph 24).

Manwaring however fails to teach an imaging unit operable to photograph said operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image; a differential signal generating unit operable to generate a differential signal between the lighted image and the unlighted image; a state information computing unit operable to compute state information of the operation article on the basis of the differential signal; and an image display processing unit operable to display a different image on the display device depending on the determined reflecting surface.

Numazaki teaches an imaging unit operable to photograph said operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a differential signal generating unit operable to generate a differential signal between the lighted image and the unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a state information computing unit operable to compute state information of the operation article on the

basis of the differential signal (Numazaki Fig. 98; column 32 lines 4-10); and an image display processing unit operable to display a different image on the display device depending on the determined reflecting surface (Numazaki column 26 lines 23-33).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with differential signal generating unit of Numazaki.

The motivation being to better obtain reflected light data of a plurality of reflective surfaces to analyze for various position characteristics of the image object.

In reference to claim 24, Manwaring teaches an information processing system comprising: an operation article having a plurality of reflecting surfaces (Manwaring page 2 paragraph 24), wherein said operation article is grasped and given a motion by an operator (Manwaring Fig. 14; page 3 paragraph 41; a golf club and golf ball put in motion by the user); a stroboscope operable to emit light to said operation article in a predetermined cycle (Manwaring page 6 paragraph 90; the strobe times the flash unit).

Manwaring however fails to teach an imaging unit operable to photograph said operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image; a differential signal generating unit operable to generate a differential signal between the lighted image and the unlighted image; a state information computing unit operable to compute state information of each of the reflecting surfaces on the basis of the differential signal; and an image display processing unit operable to display an image on the display device in accordance with the state information of the plurality of reflecting surfaces.

Numazaki teaches an imaging unit operable to photograph said operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a differential signal generating unit operable to generate a differential signal between the lighted image and the unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a state information computing unit operable to compute state information of each of the reflecting surfaces on the basis of the differential signal (Numazaki Fig. 98; column 32 lines 4-10); and an image display processing unit operable to display an image on the display device in accordance with the state information of the plurality of reflecting surfaces (Numazaki column 26 lines 23-33).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with differential signal generating unit of Numazaki.

The motivation being to better obtain reflected light data to display an image in accordance with the state information of the plurality of reflecting surfaces.

In reference to claim 26, Manwaring teaches an information processing method of displaying on a display device an image reflecting a motion of an operation article which is grasped and given the motion by an operator (Manwaring Fig. 14; page 3 paragraph 41; a golf club and golf ball put in motion by the user), said information processing method comprising: a step of emitting light to the operation article which has a reflecting surface in a predetermined cycle (Manwaring page 6 paragraph 90; the strobe times the flash unit).

Manwaring however fails to teach a step of photographing the operation article with and without light emitted from said stroboscope and acquiring a lighted image and an unlighted image; a step of generating a differential signal between the lighted image and the unlighted image; a step of computing state information of the operation article on the basis of the differential signal and generating a first trigger on the basis of the state information; and a step of displaying a first object representing a movement locus of the operation article in response to the first trigger on the display device.

Numazaki teaches a step of photographing the operation article with and without light emitted from said stroboscope and acquiring a lighted image and an unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a step of generating a differential signal between the lighted image and the unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a step of computing state information of the operation article on the basis of the differential signal and generating a first trigger on the basis of the state information (Numazaki Fig. 98; column 32 lines 4-10) ; and a step of displaying a first object representing a movement locus of the operation article in response to the first trigger on the display device (Numazaki column 26 lines 23-33).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with differential signal generating unit of Numazaki.

The motivation being to better obtain reflected light data to determine a movement locus of the display object.

In reference to claim 27, Manwaring teaches an information processing method of displaying an image on a display device on the basis of a result of detecting an operation article which is grasped and given a motion by an operator (Manwaring Fig. 14; page 3 paragraph 41; a golf club and golf ball put in motion by the user), said information processing method comprising: a step of emitting light to the operation article which has a plurality of reflecting surfaces in a predetermined cycle (Manwaring page 6 paragraph 90; the strobe times the flash unit).

Manwaring however fails to teach a step of photographing the operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image; a step of generating a differential signal between the lighted image and the unlighted image; a step of computing state information of the operation article on the basis of the differential signal and determining which of the plurality of reflecting surfaces is photographed on the basis of the state information; and a step of displaying a different image on the display device depending on the determined reflecting surface.

Numazaki teaches a step of photographing the operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a step of generating a differential signal between the lighted image and the unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a step of computing state information of the operation article on the basis of the differential signal and determining which of the plurality of reflecting surfaces is photographed on the basis of the state information (Numazaki Fig. 98; column 32 lines

4-10); and a step of displaying a different image on the display device depending on the determined reflecting surface (Numazaki column 26 lines 23-33).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with differential signal generating unit of Numazaki.

The motivation being to better obtain reflected light data to determine which of a plurality of reflective surfaces is photographed.

In reference to claim 28, Manwaring teaches an information processing method of displaying an image on a display device on the basis of a result of detecting an operation article which is grasped and given a motion by an operator (Manwaring Fig. 14; page 3 paragraph 41; a golf club and golf ball put in motion by the user), said information processing method comprising: a step of emitting light to the operation article which has a plurality of reflecting surfaces in a predetermined cycle (Manwaring page 6 paragraph 90; the strobe times the flash unit).

Manwaring however fails to teach a step of photographing the operation article with and without light emitted from said stroboscope and acquiring a lighted image and an unlighted image; a step of generating a differential signal between the lighted image and the unlighted image; a step of computing state information of each of the reflecting surfaces on the basis of the differential signal; and a step of displaying an image on the display device in accordance with the state information of the plurality of reflecting surfaces.

Numazaki teaches a step of photographing the operation article with and without light emitted from said stroboscope and acquiring a lighted image and an unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a step of generating a differential signal between the lighted image and the unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a step of computing state information of each of the reflecting surfaces on the basis of the differential signal (Numazaki Fig. 98; column 32 lines 4-10); and a step of displaying an image on the display device in accordance with the state information of the plurality of reflecting surfaces (Numazaki column 26 lines 23-33).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with differential signal generating unit of Numazaki.

The motivation being to better obtain reflected light data in order to display an image according to its state information.

In reference to claim 29, Manwaring teaches an information processing program which is installed on a computer for displaying on a display device (Manwaring Fig. 1 items 22,54) an image reflecting a motion of an operation article which is grasped and given the motion by an operator (Manwaring Fig. 14; page 3 paragraph 41; a golf club and golf ball put in motion by the user), said information processing program comprising: a step of emitting light to the operation article which has a reflecting surface in a predetermined cycle (Manwaring page 6 paragraph 90; the strobe times the flash unit).

Manwaring however fails to teach a step of photographing the operation article with and without light emitted from said stroboscope and acquiring a lighted image and an unlighted image; a step of generating a differential signal between the lighted image and the unlighted image; a step of computing state information of the operation article on the basis of the differential signal and generating a first trigger on the basis of the state information; and a step of displaying a first object representing a movement locus of the operation article in response to the first trigger on the display device.

Numazaki teaches a step of photographing the operation article with and without light emitted from said stroboscope and acquiring a lighted image and an unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a step of generating a differential signal between the lighted image and the unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a step of computing state information of the operation article on the basis of the differential signal and generating a first trigger on the basis of the state information (Numazaki Fig. 98; column 32 lines 4-10); and a step of displaying a first object representing a movement locus of the operation article in response to the first trigger on the display device (Numazaki column 26 lines 23-33).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with differential signal generating unit of Numazaki.

The motivation being to better obtain reflected light data (image taken during light emission and a next image taken during non-light emission) to analyze for various position characteristics of the image object.

In reference to claim 30, Manwaring teaches an information processing program which is installed on a computer for displaying an image on a display device (Manwaring Fig. 1 items 22,54) on the basis of a result of detecting an operation article which is grasped and given a motion by an operator (Manwaring Fig. 14; page 3 paragraph 41; a golf club and golf ball put in motion by the user), said information processing program comprising: a step of emitting light to the operation article which has a plurality of reflecting surfaces in a predetermined cycle (Manwaring page 6 paragraph 90; the strobe times the flash unit).

Manwaring however fails to teach a step of photographing the operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image; a step of generating a differential signal between the lighted image and the unlighted image; a step of computing state information of the operation article on the basis of the differential signal and determining which of the plurality of reflecting surfaces is photographed on the basis of the state information; and a step of displaying a different image on the display device depending on the determined reflecting surface.

Numazaki teaches a step of photographing the operation article with and without light emitted from said stroboscope and acquire a lighted image and an unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a step of generating a differential signal between the lighted image and the unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a step of computing state information of the operation article on the basis of the differential signal (Numazaki Fig. 98; column 32 lines 4-10) and determining which of the plurality of reflecting surfaces is photographed on the basis of the state

information (Numazaki Fig. 98; column 32 lines 4-10); and a step of displaying a different image on the display device depending on the determined reflecting surface (Numazaki column 26 lines 23-33).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with differential signal generating unit of Numazaki.

The motivation being to better obtain reflected light data to determine which of a plurality of reflecting surfaces is photographed.

In reference to claim 31, Manwaring teaches an information processing program which is installed on a computer for displaying an image on a display device (Manwaring Fig. 1 items 22,54) on the basis of a result of detecting an operation article which is grasped and given a motion by an operator (Manwaring Fig. 14; page 3 paragraph 41; a golf club and golf ball put in motion by the user), said information processing program comprising: a step of emitting light to the operation article which has a plurality of reflecting surfaces in a predetermined cycle (Manwaring page 6 paragraph 90; the strobe times the flash unit).

Manwaring however fails to teach a step of photographing the operation article with and without light emitted from said stroboscope and acquiring a lighted image and an unlighted image; a step of generating a differential signal between the lighted image and the unlighted image; a step of computing state information of each of the reflecting

surfaces on the basis of the differential signal; and a step of displaying an image in accordance with the state information of the plurality of reflecting surfaces.

Numazaki teaches a step of photographing the operation article with and without light emitted from said stroboscope and acquiring a lighted image and an unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a step of generating a differential signal between the lighted image and the unlighted image (Numazaki Fig. 2, 111; column 11 lines 9-19); a step of computing state information of each of the reflecting surfaces on the basis of the differential signal (Numazaki Fig. 98; column 32 lines 4-10); and a step of displaying an image in accordance with the state information of the plurality of reflecting surfaces (Numazaki column 26 lines 23-33).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with differential signal generating unit of Numazaki.

The motivation being to better obtain reflected light data to display an image with a plurality of reflecting surfaces.

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manwaring (US 2002/0098897) modified by Numazaki (US 6144366) as applied to claim 1, and further in view of Foote et al. (US 2003/0063133).

In reference to claim 9, claim 9 is rejected as being dependent on rejected claim 1 as discussed above and further, Manwaring modified by Numazaki fails to teach

wherein said image display processing unit displays a character string on the display device, said state information computing unit generates a fourth trigger on the basis of the state information of the operation article, and said image display processing unit displays a character string 5 differing from the character string on the display device in response to the fourth trigger.

Foote teaches wherein said image display processing unit displays a character string on the display device (Foote page 3 paragraph 36), said state information computing unit generates a fourth trigger on the basis of the state information of the operation article, and said image display processing unit displays a character string differing from the character string on the display device in response to the fourth trigger (Foote page 3 paragraph 36; text changes as the viewpoint trigger in the virtual environment changes).

It would have been obvious for one of ordinary skill in the art to combine the apparatus of Manwaring modified by Numazaki with the text display of Foote.

The motivation being to provide readable information to the user.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manwaring (US 2002/0098897) modified by Numazaki (US 6144366) as applied to claim 1, and further in view of Pryor (US 7,098,891).

In reference to claim 10, claim 10 is rejected as being dependent on rejected claim 1 as discussed above and further, Manwaring modified by Numazaki fails to teach

wherein said state information computing unit generates a fifth trigger on the basis of the state information of the operation article, and said image display processing unit updates a background image in response to the fifth trigger.

Pryor teaches wherein said state information computing unit generates a fifth trigger on the basis of the state information of the operation article, and said image display processing unit updates a background image in response to the fifth trigger (Pryor column 25 lines 31-42).

It would have been obvious to one of ordinary skill in the art to combine the apparatus of Manwaring modified by Numazaki with the background image of Pryor.

The motivation being a display with a more realistic background image.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manwaring (US 2002/0098897) modified by Numazaki (US 6144366) as applied to claim 1, and further in view of Solomon (US 2005/0151941).

In reference to claim 11, claim 11 is rejected as being dependent on rejected claim 1 as discussed above and further, Manwaring modified by Numazaki fails to teach further comprising a correction information acquisition unit operable to acquire correction information for correcting positional information as the state information of the operation article, and said state information computing unit computes corrected positional information by using the correction information.

Solomon teaches further comprising a correction information acquisition unit operable to acquire correction information for correcting positional information as the state information of the operation article, and said state information computing unit computes corrected positional information by using the correction information (Solomon page 8 paragraph 174).

It would have been obvious to one of ordinary skill in the art to combine the apparatus of Manwaring modified by Numazaki with the correction processing of Solomon.

The motivation being a display with a corrected image (Solomon page 8 paragraph 174).

6. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manwaring (US 2002/0098897) in view of Gyde (US 2006/0238511).

In reference to claim 32, Manwaring teaches a game system for playing a game comprising: an operation article actually operated by an operator (Manwaring Fig. 14; page 3 paragraph 41); an image sensor operable to photograph said operation article operated by the operator (Manwaring Fig. 2A); and a processing device which is connected to a display device when playing the game (Manwaring Fig. 1; 22, 54), receives an image signal from said image sensor and displays contents of the game on the display device (Manwaring page 3 paragraph 52), wherein said operation article

serves a prescribed role in the game on the basis of a image of said operation article photographed by said image sensor (Manwaring page 3 paragraph 59, golf club).

Manwaring however fails to teach a movement locus of said operation article is simplified as a beltlike image in the contents displayed on the display device by said processing device when playing the game, the beltlike image is a connection between at least two points of a movement locus of said operation article operated by the operator, and the at least two points which is displayed on the display device are obtained in accordance with images given by said image sensor.

Gyde teaches a movement locus of said operation article is simplified as a beltlike image in the contents displayed on the display device by said processing device when playing the game, the beltlike image is a connection between at least two points of a movement locus of said operation article operated by the operator, and the at least two points which is displayed on the display device are obtained in accordance with images given by said image sensor Gyde Fig. 2; page 2 paragraph 25; line segments as beltlike objects connecting waypoints on the glide path).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Manwaring with the beltlike object of Gyde).

The motivation being to provide the user with a more accurate representation of the object position.

Allowable Subject Matter

Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In reference to claim 5, prior art of record does not teach wherein the first object representing the movement locus comprises a beltlike object, said image display processing unit is representative of the movement locus of the operation article by displaying the beltlike object on the display device so that a width varies for each frame, and the width of the beltlike object increases as the frame is updated, and thereafter decreases as the frame is updated.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHARLES HICKS whose telephone number is (571)270-7535. The examiner can normally be reached on Monday-Thursday from 7:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kent Chang, can be reached on 571-272-7667. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kent Chang/

Supervisory Patent Examiner, Art Unit 4175